



## ENVIRONMENTAL PROTECTION AGENCY

### 40 CFR Part 52

[EPA-R01-OAR-2009-0631 ; A-1-FRL-9638-2]

#### Approval and Promulgation of Air Quality Implementation Plans; Rhode Island; Regional Haze

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

**SUMMARY:** EPA is proposing approval of a revision to the Rhode Island State Implementation Plan (SIP) submitted by the Rhode Island Department of Environmental Management (RI DEM) on August 7, 2009, that addresses regional haze for the first planning period from 2008 through 2018. This revision addresses the requirements of the Clean Air Act (CAA) and EPA's rules that require States to prevent any future, and remedy any existing, manmade impairment of visibility in mandatory Class I areas (also referred to as the "regional haze program"). States are required to assure reasonable progress toward the national goal of achieving natural visibility conditions in Class I areas.

**DATES:** Written comments must be received on or before **[Insert date 30 days after publication in the Federal Register]**.

**ADDRESSES:** Submit your comments, identified by Docket ID Number EPA-R01-OAR-2009-0631 by one of the following methods:

1. [www.regulations.gov](http://www.regulations.gov) : Follow the on-line instructions for submitting comments.
2. E-mail: [arnold.anne@epa.gov](mailto:arnold.anne@epa.gov)

3. Fax: (617) 918-0047.
4. Mail: "Docket Identification Number EPA-R01-OAR-2009-0631," Anne Arnold, U.S. Environmental Protection Agency, EPA New England Regional Office, Office of Ecosystem Protection, Air Quality Planning Unit, 5 Post Office Square - Suite 100, (Mail code OEP05-2), Boston, MA 02109 - 3912.
5. Hand Delivery or Courier. Deliver your comments to: Anne Arnold, Manager, Air Quality Planning Unit, U.S. Environmental Protection Agency, EPA New England Regional Office, Office of Ecosystem Protection, Air Quality Planning Unit, 5 Post Office Square - Suite 100, (mail code OEP05-2), Boston, MA 02109 - 3912. Such deliveries are only accepted during the Regional Office's normal hours of operation. The Regional Office's official hours of business are Monday through Friday, 8:30 to 4:30, excluding legal holidays.

*Instructions:* Direct your comments to Docket ID No. EPA-R01-OAR-2009-0631. EPA's policy is that all comments received will be included in the public docket without change and may be made available online at [www.regulations.gov](http://www.regulations.gov), including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit through [www.regulations.gov](http://www.regulations.gov), or e-mail, information that you consider to be CBI or otherwise protected. The [www.regulations.gov](http://www.regulations.gov) website is an "anonymous access" system, which means EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an e-mail comment directly to EPA without going through [www.regulations.gov](http://www.regulations.gov) your e-mail address will be automatically captured and included as part of the comment that is placed

in the public docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses.

*Docket:* All documents in the electronic docket are listed in the [www.regulations.gov](http://www.regulations.gov) index.

Although listed in the index, some information is not publicly available, i.e., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form.

Publicly available docket materials are available either electronically in [www.regulations.gov](http://www.regulations.gov) or in hard copy at Office of Ecosystem Protection, U.S. Environmental Protection Agency, EPA New England Regional Office, Office of Ecosystem Protection, Air Quality Planning Unit, 5 Post Office Square - Suite 100, Boston, MA. EPA requests that if at all possible, you contact the contact listed in the **FOR FURTHER INFORMATION CONTACT** section to schedule your inspection. The Regional Office's official hours of business are Monday through Friday, 8:30 to 4:30, excluding legal holidays.

In addition, copies of the State submittal are also available for public inspection during normal business hours, by appointment at the State Air Agency; Office of Air Resources, Department of Environmental Management, 235 Promenade Street, Providence, RI 02908-5767.

**FOR FURTHER INFORMATION CONTACT:** Anne McWilliams, Air Quality Unit, U.S. Environmental Protection Agency, EPA New England Regional Office, 5 Post Office Square – Suite 100, (Mail Code OEP05-02), Boston, MA 02109 – 3912, telephone number (617) 918-1697, fax number (617) 918-0697, e-mail [mcwilliams.anne@epa.gov](mailto:mcwilliams.anne@epa.gov)

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## **I. What is the Background for EPA’s Proposed Action?**

### **A. The Regional Haze Problem**

Regional haze is visibility impairment that is produced by a multitude of sources and activities which are located across a broad geographic area and emit fine particles and their precursors (e.g., sulfur dioxide, nitrogen oxides, and in some cases, ammonia and volatile organic compounds). Fine particle precursors react in the atmosphere to form fine particulate matter (PM<sub>2.5</sub>) (e.g., sulfates, nitrates, organic carbon, elemental carbon, and soil dust), which also impair visibility by scattering and absorbing light. Visibility impairment reduces the clarity, color, and visible distance that one can see. PM<sub>2.5</sub> can also cause serious health effects and mortality in humans and contributes to environmental effects such as acid deposition.

Data from the existing visibility monitoring network, the “Interagency Monitoring of Protected Visual Environments” (IMPROVE) monitoring network, show that visibility impairment caused by air pollution occurs virtually all the time at most national park and wilderness areas. The average visual range in many Class I areas (i.e., national parks and memorial parks, wilderness areas, and international parks meeting certain size criteria) in the Western United States is 100-150 kilometers, or about one-half to two-thirds of the visual range that would exist without manmade air pollution. In most of the eastern Class I areas of the United States, the average visual range is less than 30 kilometers, or about one-fifth of the visual range that would exist under estimated natural conditions. See 64 FR 35715, (July 1, 1999).

## **B. Background Information**

In section 169A(a)(1) of the 1977 Amendments to the CAA, Congress created a program for protecting visibility in the nation’s national parks and wilderness areas. This section of the CAA establishes as a national goal the “prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas<sup>1</sup> which impairment results from manmade air pollution.” On December 2, 1980, EPA promulgated regulations to address visibility impairment in Class I areas that is “reasonably attributable” to a single source or small group of sources, i.e., “reasonably attributable visibility impairment” (RAVI). See 45 FR 80084

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<sup>1</sup> Areas designated as mandatory Class I Federal areas consist of national parks exceeding 6000 acres, wilderness areas and national memorial parks exceeding 5000 acres, and all international parks that were in existence on August 7, 1977 (42 U.S.C. 7472(a)). In accordance with section 169A of the CAA, EPA, in consultation with the Department of Interior, promulgated a list of 156 areas where visibility is identified as an important value (44 FR 69122, November 30, 1979). The extent of a mandatory Class I area includes subsequent changes in boundaries, such as park expansions (42 U.S.C. 7472(a)). Although States and Tribes may designate as Class I additional areas which they consider to have visibility as an important value, the requirements of the visibility program set forth in section 169A of the CAA apply only to “mandatory Class I Federal areas.” Each mandatory Class I Federal area is the responsibility of a “Federal Land Manager” (FLM). (42 U.S.C. 7602(i)). When we use the term “Class I area” in this action, we mean a “mandatory Class I Federal area.”

(Dec. 2, 1980). These regulations represented the first phase in addressing visibility impairment. EPA deferred action on regional haze that emanates from a variety of sources until monitoring, modeling and scientific knowledge about the relationships between pollutants and visibility impairment were improved.

Congress added section 169B to the CAA in 1990 to address regional haze issues. EPA promulgated a rule to address regional haze on July 1, 1999 (64 FR 35714), the Regional Haze Rule. The Regional Haze Rule revised the existing visibility regulations to integrate into the regulation provisions addressing regional haze impairment and established a comprehensive visibility protection program for Class I areas. The requirements for regional haze, found at 40 CFR 51.308 and 51.309, are included in EPA's visibility protection regulations at 40 CFR 51.300-309. Some of the main elements of the regional haze requirements are summarized in Section II. The requirement to submit a regional haze SIP applies to all 50 States, the District of Columbia and the Virgin Islands. 40 CFR 51.308(b) requires States to submit the first implementation plan addressing regional haze visibility impairment no later than December 17, 2007. On January 15, 2009, EPA found that 37 States, the District of Columbia and the U.S. Virgin Islands failed to submit this required implementation plan. See 74 FR 2392, (Jan. 15, 2009). In particular, EPA found that Rhode Island failed to submit a plan that met the requirements of 40 CFR 51.308. See 74 FR 2393. On August 7, 2009, RI DEM submitted revisions to the Rhode Island SIP to address regional haze as required by 40 CFR 51.308. EPA has reviewed Rhode Island's submittal and proposes to find that it is consistent with the requirements of 40 CFR 51.308 outlined in Section II.

### **C. Roles of Agencies in Addressing Regional Haze**

Successful implementation of the regional haze program will require long-term regional coordination among States, tribal governments, and various federal agencies. As noted above, pollution affecting the air quality in Class I areas can be transported over long distances, even hundreds of kilometers. Therefore, to effectively address the problem of visibility impairment in Class I areas, States need to develop strategies in coordination with one another, taking into account the effect of emissions from one jurisdiction on the air quality in another.

Because the pollutants that lead to regional haze can originate from sources located across broad geographic areas, EPA has encouraged the States and Tribes across the United States to address visibility impairment from a regional perspective. Five regional planning organizations (RPOs) were developed to address regional haze and related issues. The RPOs first evaluated technical information to better understand how their States and Tribes impact Class I areas across the country, and then pursued the development of regional strategies to reduce emissions of PM<sub>2.5</sub> and other pollutants leading to regional haze.

The Mid-Atlantic/Northeast Visibility Union (MANE-VU) RPO is a collaborative effort of State governments, Tribal governments, and various federal agencies established to initiate and coordinate activities associated with the management of regional haze, visibility and other air quality issues in the Northeastern United States. Member State and Tribal governments include: Connecticut, Delaware, the District of Columbia, Maine, Maryland, Massachusetts, New



Hampshire, New Jersey, New York, Pennsylvania, Penobscot Indian Nation, Rhode Island, and Vermont.

## **II. What Are the Requirements for Regional Haze SIPs?**

### **A. The CAA and the Regional Haze Rule (RHR)**

Regional haze SIPs must assure reasonable progress towards the national goal of achieving natural visibility conditions in Class I areas. Section 169A of the CAA and EPA's implementing regulations require States to establish long-term strategies for making reasonable progress toward meeting this goal. Implementation plans must also give specific attention to certain stationary sources that were in existence on August 7, 1977, but were not in operation before August 7, 1962, and require these sources, where appropriate, to install Best Available Retrofit Technology (BART) controls for the purpose of eliminating or reducing visibility impairment. The specific regional haze SIP requirements are discussed in further detail below.

### **B. Determination of Baseline, Natural, and Current Visibility Conditions**

The RHR establishes the deciview (dv) as the principal metric for measuring visibility. This visibility metric expresses uniform changes in haziness in terms of common increments across the entire range of visibility conditions, from pristine to extremely hazy conditions. Visibility is determined by measuring the visual range (or deciview), which is the greatest distance, in kilometers or miles, at which a dark object can be viewed against the sky. The deciview is a useful measure for tracking progress in improving visibility, because each deciview change is an

equal incremental change in visibility perceived by the human eye. Most people can detect a change in visibility at one deciview.<sup>2</sup>

The deciview is used in expressing Reasonable Progress Goals (RPGs) (which are interim visibility goals towards meeting the national visibility goal), defining baseline, current, and natural conditions, and tracking changes in visibility. The regional haze SIPs must contain measures that ensure “reasonable progress” toward the national goal of preventing and remedying visibility impairment in Class I areas caused by manmade air pollution by reducing anthropogenic emissions that cause regional haze. The national goal is a return to natural conditions, i.e., manmade sources of air pollution would no longer impair visibility in Class I areas.

To track changes in visibility over time at each of the 156 Class I areas covered by the visibility program and as part of the process for determining reasonable progress, States must calculate the degree of existing visibility impairment at each Class I area within the State at the time of each regional haze SIP submittal and periodically review progress every five years midway through each 10-year planning period. To do this, the RHR requires States to determine the degree of impairment (in deciviews) for the average of the 20 percent least impaired (“best”) and 20 percent most impaired (“worst”) visibility days over a specified time period at each of their Class I areas. In addition, States must also develop an estimate of natural visibility conditions for the purposes of comparing progress toward the national goal. Natural visibility is determined by estimating the natural concentrations of pollutants that cause visibility impairment and then calculating total light extinction based on those estimates. EPA has provided guidance

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<sup>2</sup> The preamble to the RHR provides additional details about the deciview. See 64 FR 35714, 35725 (July 1, 1999).

to States regarding how to calculate baseline, natural, and current visibility conditions in documents titled, EPA's *Guidance for Estimating Natural Visibility conditions under the Regional Haze Rule*, September 2003, (EPA-454/B-03-005, available at [www.epa.gov/ttncaaa1/t1/memoranda/rh\\_envcurhr\\_gd.pdf](http://www.epa.gov/ttncaaa1/t1/memoranda/rh_envcurhr_gd.pdf)), (hereinafter referred to as "EPA's 2003 Natural Visibility Guidance"), and *Guidance for Tracking Progress Under the Regional Haze Rule*, September 2003 (EPA-454/B-03-004 located at [www.epa.gov/ttncaaa1/t1/memoranda/rh\\_tpurhr\\_gd.pdf](http://www.epa.gov/ttncaaa1/t1/memoranda/rh_tpurhr_gd.pdf)), (hereinafter referred to as "EPA's 2003 Tracking Progress Guidance").

For the first regional haze SIPs that were due by December 17, 2007, "baseline visibility conditions" were the starting points for assessing "current" visibility impairment. Baseline visibility conditions represent the degree of impairment for the 20 percent least impaired days and 20 percent most impaired days at the time the regional haze program was established. Using monitoring data from 2000 through 2004, States are required to calculate the average degree of visibility impairment for each Class I area within the State, based on the average of annual values over the five year period. The comparison of initial baseline visibility conditions to natural visibility conditions indicates the amount of improvement necessary to attain natural visibility, while the future comparison of baseline conditions to the then current conditions will indicate the amount of progress made. In general, the 2000-2004 baseline period is considered the time from which improvement in visibility is measured.

### **C. Determination of Reasonable Progress Goals (RPGs)**

The vehicle for ensuring continuing progress towards achieving the natural visibility goal is the submission of a series of regional haze SIPs from the States that establish RPGs for Class I areas for each (approximately) 10-year planning period. The RHR does not mandate specific milestones or rates of progress, but instead calls for States to establish goals that provide for “reasonable progress” toward achieving natural (i.e., “background”) visibility conditions for their Class I areas. In setting RPGs, States must provide for an improvement in visibility for the most impaired days over the (approximately) 10-year period of the SIP, and ensure no degradation in visibility for the least impaired days over the same period.

States have significant discretion in establishing RPGs, but are required to consider the following factors established in the CAA and in EPA’s RHR: (1) the costs of compliance; (2) the time necessary for compliance; (3) the energy and non-air quality environmental impacts of compliance; and (4) the remaining useful life of any potentially affected sources. States must demonstrate in their SIPs how these factors are considered when selecting the RPGs for the best and worst days for each applicable Class I area. See 40 CFR 51.308(d)(1)(i)(A). States have considerable flexibility in how they take these factors into consideration, as noted in EPA’s July 1, 2007 memorandum from William L. Wehrum, Acting Administrator for Air and Radiation, to EPA Regional Administrators, EPA Regions 1-10, entitled *Guidance for Setting Reasonable Progress Goals under the Regional Haze Program* (p. 4-2, 5-1)(EPA’s Reasonable Progress Guidance). In setting the RPGs, States must also consider the rate of progress needed to reach natural visibility conditions by 2064 (referred to as the “uniform rate of progress” or the “glide path”) and the emission reduction measures needed to achieve that rate of progress over the 10-year period of the SIP. The year 2064 represents a rate of progress which States are to use for

analytical comparison to the amount of progress they expect to achieve. In setting RPGs, each State with one or more Class I areas (“Class I State”) must also consult with potentially “contributing States,” i.e., other nearby States with emission sources that may be contributing to visibility impairment at the Class I State’s areas. See 40 CFR 51.308(d)(1)(iv).

#### **D. Best Available Retrofit Technology (BART)**

Section 169A of the CAA directs States to evaluate the use of retrofit controls at certain larger, often uncontrolled, older stationary sources in order to address visibility impacts from these sources. Specifically, the CAA requires States to revise their SIPs to contain such measures as may be necessary to make reasonable progress towards the natural visibility goal, including a requirement that certain categories of existing stationary sources built between 1962 and 1977 procure, install, and operate the “Best Available Retrofit Technology” as determined by the State. (CAA 169A(b)(2)a)).<sup>3</sup> States are directed to conduct BART determinations for such sources that may be anticipated to cause or contribute to any visibility impairment in a Class I area. Rather than requiring source-specific BART controls, States also have the flexibility to adopt an emissions trading program or other alternative program as long as the alternative provides greater reasonable progress towards improving visibility than BART.

On July 6, 2005, EPA published the *Guidelines for BART Determinations Under the Regional Haze Rule* at Appendix Y to 40 CFR part 51 (hereinafter referred to as the “BART Guidelines”) to assist States in determining which of their sources should be subject to the BART requirements and in determining appropriate emission limits for each applicable source. In making a BART applicability determination for a fossil fuel-fired electric generating plant with a

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<sup>3</sup> The set of “major stationary sources” potentially subject to BART are listed in CAA section 169A(g)(7).

total generating capacity in excess of 750 megawatts (MW), a State must use the approach set forth in the BART Guidelines. A State is encouraged, but not required, to follow the BART Guidelines in making BART determinations for other types of sources.

States must address all visibility impairing pollutants emitted by a source in the BART determination process. The most significant visibility impairing pollutants are sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and particulate matter (PM). EPA has stated that States should use their best judgment in determining whether volatile organic compounds (VOCs), or ammonia (NH<sub>3</sub>) and ammonia compounds impair visibility in Class I areas.

The RPOs provided air quality modeling to the States to help them in determining whether potential BART sources can be reasonably expected to cause or contribute to visibility impairment in a Class I area. Under the BART Guidelines, States may select an exemption threshold value for their BART modeling, below which a BART eligible source would not be expected to cause or contribute to visibility impairment in any Class I area. The State must document this exemption threshold value in the SIP and must state the basis for its selection of that value. Any source with emissions that model above the threshold value would be subject to a BART determination review. The BART Guidelines acknowledge varying circumstances affecting different Class I areas. States should consider the number of emission sources affecting the Class I areas at issue and the magnitude of the individual sources' impacts. Any exemption threshold set by the State should not be higher than 0.5 deciviews. See 70 FR 39161, (July 6, 2005).

In their SIPs, States must identify potential BART sources, described as “BART-eligible sources” in the RHR, and document their BART control determination analyses. The term “BART-eligible source” used in the BART Guidelines means the collection of individual emission units at a facility that together comprises the BART-eligible source. See 70 FR 39161, (July 6, 2005). In making BART determinations, section 169A(g)(2) of the CAA requires that States consider the following factors: (1) the costs of compliance; (2) the energy and non-air quality environmental impacts of compliance; (3) any existing pollution control technology in use at the source; (4) the remaining useful life of the source; and (5) the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology. States are free to determine the weight and significance to be assigned to each factor. See 70 FR 39170, (July 6, 2005).

A regional haze SIP must include source-specific BART emission limits and compliance schedules for each source subject to BART. Once a State has made its BART determination, the BART controls must be installed and in operation as expeditiously as practicable, but no later than five years after the date of EPA approval of the regional haze SIP, as required by CAA (section 169(g)(4)) and the RHR (40 CFR 51.308(e)(1)(iv)). In addition to what is required by the RHR, general SIP requirements mandate that the SIP must also include all regulatory requirements related to monitoring, recordkeeping, and reporting for the BART controls on the source. States have the flexibility to choose the type of control measures they will use to meet the requirements of BART.

#### **E. Long-Term Strategy (LTS)**

Forty CFR 51.308(d)(3) of the RHR requires that States include a LTS in their SIPs. The LTS is the compilation of all control measures a State will use to meet any applicable RPGs. The LTS must include “enforceable emissions limitations, compliance schedules, and other measures as necessary to achieve the reasonable progress goals” for all Class I areas within, or affected by emissions from, the State. See 40 CFR 51.308(d)(3).

When a State’s emissions are reasonably anticipated to cause or contribute to visibility impairment in a Class I area located in another State, the RHR requires the impacted State to coordinate with the contributing States in order to develop coordinated emissions management strategies. See 40 CFR 51.308(d)(3)(i). In such cases, the contributing State must demonstrate that it has included in its SIP all measures necessary to obtain its share of the emission reductions needed to meet the RPGs for the Class I area. The RPOs have provided forums for significant interstate consultation, but additional consultations between States may be required to sufficiently address interstate visibility issues. This is especially true where two States belong to different RPOs.

States should consider all types of anthropogenic sources of visibility impairment in developing their LTS, including stationary, minor, mobile, and area sources. At a minimum, States must describe how each of the seven factors listed below is taken into account in developing their LTS: (1) emission reductions due to ongoing air pollution control programs, including measures to address RAVI; (2) measures to mitigate the impacts of construction activities; (3) emissions limitations and schedules for compliance to achieve the RPG; (4) source retirement and replacement schedules; (5) smoke management techniques for agricultural and



forestry management purposes including plans as currently exist within the State for these purposes; (6) enforceability of emissions limitations and control measures; (7) the anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions over the period addressed by the LTS. See 40 CFR 51.308(d)(3)(v).

#### **F. Coordinating Regional Haze and Reasonably Attributable Visibility Impairment (RAVI) LTS**

As part of the RHR, EPA revised 40 CFR 51.306(c) regarding the LTS for RAVI to require that the RAVI plan must provide for a periodic review and SIP revision not less frequently than every three years until the date of submission of the State's first plan addressing regional haze visibility impairment, which was due December 17, 2007, in accordance with 40 CFR 51.308(b) and (c). On or before this date, the State must revise its plan to provide for review and revision of a coordinated LTS for addressing reasonably attributable and regional haze visibility impairment, and the State must submit the first such coordinated LTS with its first regional haze SIP. Future coordinated LTS's, and periodic progress reports evaluating progress towards RPGs, must be submitted consistent with the schedule for SIP submission and periodic progress reports set forth in 40 CFR 51.308(f) and 51.308(g), respectively. The periodic reviews of a State's LTS must report on both regional haze and RAVI impairment and must be submitted to EPA as a SIP revision.

#### **G. Monitoring Strategy and Other Implementation Plan Requirements**

Forty CFR 51.308(d)(4) of the RHR includes the requirement for a monitoring strategy for measuring, characterizing, and reporting of regional haze visibility impairment that is

representative of all mandatory Class I Federal areas within the State. The strategy must be coordinated with the monitoring strategy required in 40 CFR 51.305 for RAVI. Compliance with this requirement may be met through participation in the IMPROVE network. The monitoring strategy is due with the first regional haze SIP, and it must be reviewed every five years. The monitoring strategy must also provide for additional monitoring sites if the IMPROVE network is not sufficient to determine whether RPGs will be met.

The SIP must also provide for the following:

- Procedures for using monitoring data and other information in a State with mandatory Class I areas to determine the contribution of emissions from within the State to regional haze visibility impairment at Class I areas both within and outside the State;
- Procedures for using monitoring data and other information in a State with no mandatory Class I areas to determine the contribution of emissions from within the State to regional haze visibility impairment at Class I areas in other States;
- Reporting of all visibility monitoring data to the Administrator at least annually for each Class I area in the State, and where possible, in electronic format;
- Developing a statewide inventory of emissions of pollutants that are reasonably anticipated to cause or contribute to visibility impairment in any Class I area. The inventory must include emissions for a baseline year, emissions for the most recent year for which data are available, and estimates of future projected emissions. A State must also make a commitment to update the inventory periodically; and
- Other elements, including reporting, recordkeeping, and other measures necessary to assess and report on visibility.

Forty CFR 51.308(f) of the RHR requires control strategies to cover an initial implementation period extending to the year 2018, with a comprehensive reassessment and revision of those strategies, as appropriate, every 10 years thereafter. Periodic SIP revisions must meet the core requirements of 40 CFR 51.308(d) with the exception of BART. The BART provisions of 40 CFR 51.308(e), as noted above, apply only to the first implementation period. Periodic SIP revisions will assure that the statutory requirement of reasonable progress will continue to be met.

#### **H. Consultation with States and Federal Land Managers (FLMs)**

The RHR requires that States consult with FLMs before adopting and submitting their SIPs. See 40 CFR 51.308(i). States must provide FLMs an opportunity for consultation, in person and at least 60 days prior to holding any public hearing on the SIP. This consultation must include the opportunity for the FLMs to discuss their assessment of impairment of visibility in any Class I area and to offer recommendations on the development of the RPGs and on the development and implementation of strategies to address visibility impairment. Further, a State must include in its SIP a description of how it addressed any comments provided by the FLMs. Finally, a SIP must provide procedures for continuing consultation between the State and FLMs regarding the State's visibility protection program, including development and review of SIP revisions, five-year progress reports, and the implementation of other programs having the potential to contribute to impairment of visibility in Class I areas.

### **III. What is EPA's Analysis of Rhode Island's Regional Haze Submittal?**

On August 7, 2009, RI DEM's Office of Air Resources submitted revisions to the Rhode Island SIP to address regional haze as required by EPA's RHR, specifically 40 CFR 51.308. EPA has reviewed Rhode Island's submittal and is proposing to find that it is consistent with the requirements of 40 CFR 51.308 as outlined in Section II. A detailed analysis follows.

Rhode Island is responsible for developing a regional haze SIP which addresses Rhode Island's impact on any nearby Class I areas. As Rhode Island has no Class I areas within its borders, Rhode Island is not required to address the following Regional Haze SIP elements: a) calculation of baseline and natural visibility conditions, b) establishment of reasonable progress goals, c) monitoring requirements and d) RAVI requirements.

In addition, Rhode Island evaluated the major point sources in the State and determined that none meet the criteria (as discussed in Section II.D) to be considered BART eligible. EPA is proposing to approve RI DEM's determination that there are no BART-eligible sources in Rhode Island.

#### **A. Rhode Island's Impact on MANE-VU Class I Areas**

Rhode Island is a member of the MANE-VU RPO. The MANE-VU RPO contains seven Class I areas in four States: Moosehorn Wilderness Area, Acadia National Park, and Roosevelt/Campobello International Park in Maine; Presidential Range/Dry River Wilderness Area and Great Gulf Wilderness Area in New Hampshire; Brigantine Wilderness Area in New Jersey; and Lye Brook Wilderness Area in Vermont.

Through source apportionment modeling, MANE-VU assisted States in determining their contribution to the visibility impairment of each Class I area in the MANE-VU region. Rhode Island and the other MANE-VU States adopted a weight-of-evidence approach which relied on several independent methods for assessing the contribution of different sources and geographic source regions to regional haze in the northeastern and mid-Atlantic portions of the United States. Details about each technique can be found in the NESCAUM Document *Contributions to Regional Haze in the Northeast and Mid-Atlantic United States*, August 2006 (hereinafter referred to as the “Contribution Report”).<sup>4</sup>

The source apportionment modeling demonstrated that the contribution of Rhode Island emissions to total sulfate (the main contributor to visibility impairment in the Northeast) was consistently determined to be no more than 0.31% of the total sulfate at any Class I area. This finding was consistently predicted by different assessment techniques that are based on the application of disparate chemical, meteorological and physical principles. The greatest modeled contribution from Rhode Island for each of the MANE-VU Class I areas was 0.31% sulfate at Acadia National Park, 0.22% sulfate at Moosehorn Wilderness Area and Roosevelt Campobello International Park, 0.11% sulfate at Great Gulf Wilderness Area and Presidential Range – Dry River Wilderness Area, 0.08% sulfate at Lye Brook Wilderness Area, and 0.14% at Brigantine Wilderness Area. The impact of sulfate on visibility is discussed in greater detail below.

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<sup>4</sup> The August 2006 NESCAUM document “Contributions to Regional Haze in the Northeast and Mid-Atlantic United States” has been provided as part of the docket to this proposed rulemaking.

The MANE-VU Class I States determined that any State contributing at least 2% of the total sulfate observed on the 20 percent worst visibility days in 2002 were contributors to visibility impairment at the Class I area. Connecticut, Rhode Island, Vermont, and the District of Columbia were determined to contribute less than 2% of sulfate at any of the Class I areas in the Northeast.

EPA is proposing to find that RI DEM has adequately demonstrated that emissions from Rhode Island sources do not cause or contribute to visibility impairment in nearby Class I Areas.

## **B. Long-Term Strategy**

As described in Section II.E of this action, the LTS is a compilation of State-specific control measures relied on by the State to obtain its share of emission reductions to support the RPGs established by Maine, New Hampshire, Vermont, and New Jersey, the nearby Class I area States. Rhode Island's LTS for the first implementation period addresses the emissions reductions from federal, State, and local controls that take effect in the State from the baseline period starting in 2002 until 2018. Rhode Island participated in the MANE-VU regional strategy development process and supported a regional approach towards deciding which control measures to pursue for regional haze, which was based on technical analyses documented in the following reports:

a) the Contribution Report; b) *Assessment of Reasonable Progress for Regional Haze in MANE-VU Class I Areas* (available at [www.marama.org/visibility/RPG/FinalReport/RPGFinalReport\\_070907.pdf](http://www.marama.org/visibility/RPG/FinalReport/RPGFinalReport_070907.pdf)); c) *Five-Factor Analysis of BART-Eligible Sources: Survey of Options for Conducting BART Determinations* (available at [www.nescaum.org/documents/bart-final-memo-06-28-07.pdf](http://www.nescaum.org/documents/bart-final-memo-06-28-07.pdf)); and d) *Assessment*

*of Control Technology Options for BART-Eligible Sources: Steam Electric Boilers, Industrial Boilers, Cement Plants and Paper, and Pulp Facilities* (available at [www.nescaum.org/documents/bart-control-assessment.pdf](http://www.nescaum.org/documents/bart-control-assessment.pdf)).

## **1. Emissions Inventory for 2018 with Federal and State Control Requirements**

The State-wide emissions inventories used by MANE-VU in its regional haze technical analyses were developed by MARAMA for MANE-VU with assistance from Rhode Island. The 2018 emissions inventory was developed by projecting 2002 emissions forward based on assumptions regarding emissions growth due to projected increases in economic activity and emissions reductions expected from federal and State regulations. MANE-VU's emissions inventories included estimates of NO<sub>x</sub>, coarse particulate matter (PM<sub>10</sub>), PM<sub>2.5</sub>, and SO<sub>2</sub>, VOC, and NH<sub>3</sub>. The BART guidelines direct States to exercise judgment in deciding whether VOC and NH<sub>3</sub> impair visibility in their Class I area(s). As discussed further in Section III.B.3 below, MANE-VU demonstrated that anthropogenic emissions of sulfates are the major contributor to PM<sub>2.5</sub> mass and visibility impairment at Class I areas in the Northeast and Mid-Atlantic region. It was also determined that the total ammonia emissions in the MANE-VU region are extremely small.

MANE-VU developed emissions inventories for four inventory source classifications: 1) stationary point sources, 2) stationary area sources, 3) non-road mobile sources, and 4) on-road mobile sources. The New York Department of Environmental Conservation also developed an inventory of biogenic emissions for the entire MANE-VU region. Stationary point sources are those sources that emit greater than a specified tonnage per year, depending on the pollutant,

with data provided at the facility level. Stationary area sources are those sources whose individual emissions are relatively small, but due to the large number of these sources, the collective emissions from the source category could be significant. Non-road mobile sources are equipment that can move but do not use the roadways. On-road mobile source emissions are automobiles, trucks, and motorcycles that use the roadway system. The emissions from these sources are estimated by vehicle type and road type. Biogenic sources are natural sources like trees, crops, grasses, and natural decay of plants. Stationary point sources emission data is tracked at the facility level. For all other source types, emissions are summed on the county level.

There are many federal and State control programs being implemented that MANE-VU and Rhode Island anticipate will reduce emissions between the baseline period and 2018. Emission reductions from these control programs in the MANE-VU region were projected to achieve substantial visibility improvement by 2018 at all of the MANE-VU Class I areas. To assess emissions reductions from ongoing air pollution control programs, BART, and reasonable progress goals, MANE-VU developed 2018 emissions projections called “Best and Final.” The emissions inventory provided by the State of Rhode Island for the Best and Final 2018 projections is based on expected control requirements.

Rhode Island relied on emission reductions from the following ongoing and expected air pollution control programs as part of the State’s long term strategy. For electrical generating units (EGUs), Rhode Island relied on Air Pollution Control (APC) Regulations Numbers 38 and 41 which limit NO<sub>x</sub> emissions from all EGUs. The State also relied on source specific permit



restrictions limiting the sulfur content of fuel oil to 0.05% at Dominion Energy Manchester Street, 0.0015% at Ocean State Power and 0.2% at Pawtucket Power. Rhode Island also relied on the following controls on non-EGU point sources in estimating 2018 emissions inventories: NO<sub>x</sub> SIP Call Phases I and II; NO<sub>x</sub> Reasonably Available Control Technology (RACT) in 1-hour Ozone SIP; NO<sub>x</sub> Ozone Transport Commission (OTC) 2001 Model Rule for Industrial, Commercial, and Institutional (ICI) Boilers; VOC 2-year, 4-year, 7-year and 10-year Maximum Achievable Control Technology (MACT) Standards; Combustion Turbine and Reciprocating Internal Combustion Engine (RICE) MACT; and Industrial Boiler/Process Heater MACT (also known as the Industrial Boiler MACT).

On July 30, 2007, the U.S. Court of Appeals for the District of Columbia vacated and remanded the Industrial Boiler MACT Rule. *NRDC v. EPA*, 489F.3d 1250 (D.C. Cir. 2007). This MACT was vacated since it was directly affected by the vacatur and remand of the Commercial and Industrial Solid Waste Incinerator (CISWI) definition rule. EPA proposed a new Industrial Boiler MACT rule to address the vacatur on June 4, 2010 (75 FR 32006) and issued a final rule on March 21, 2011 (76 FR 15608). On May 18, 2011, EPA stayed the effective date of the Industrial Boiler MACT pending review by the D.C. Circuit or the completion of EPA's reconsideration of the rule. See 76 FR 28662.

On December 2, 2011, EPA issued a proposed reconsideration of the MACT standards for existing and new boilers at major (76 FR 80598) and area (76 FR 80532) source facilities, and for Commercial and Industrial Solid Waste Incinerators (76 FR 80452). On January 9, 2012, the U.S. District Court for the District of Columbia vacated EPA's stay of the effectiveness date of

the Industrial Boiler MACT, reinstating the original effective date and therefore requiring compliance with the current rule in 2014. *Sierra Club v. Jackson*, Civ. No. 11-1278, slip op. (D.D.C. Jan. 9, 2012).

Even though Rhode Island's modeling is based on the old Industrial Boiler MACT limits Rhode Island's modeling conclusions are unlikely to be affected because the expected reductions in SO<sub>2</sub> and PM resulting from the vacated MACT rule are a relatively small component of the Rhode Island inventory and the expected emission reductions from the final MACT rule are comparable to those modeled. In addition, the new MACT rule requires compliance by 2014 and therefore the expected emission reductions will be achieved prior to the end of the first implementation period in 2018. Thus, EPA does not expect that differences between the old and revised Industrial Boiler MACT emission limits would affect the adequacy of the existing Rhode Island regional haze SIP. If there is a need to address discrepancies between projected emissions reductions from the old Industrial Boiler MACT and the Industrial Boiler MACT finalized in March 2011, we expect Rhode Island to do so in their 5-year progress report.

Controls on area sources expected by 2018 include: the OTC VOC rules for consumer products (APC Regulation No. 31); architectural and industrial maintenance coatings (APC Regulation No. 33) and solvent cleaning (APC Regulation No. 36); mobile equipment repair and refinishing (APC Regulation No. 30); VOC control measures for adhesive and sealants (APC Regulation No. 44); VOC control measures for emulsified and cutback asphalt paving (APC Regulation No. 25); and VOC control measures for portable fuel containers (contained in EPA's Mobile Source Air Toxics rule).

Controls on mobile sources expected by 2018 include: enhanced safety inspection program (Rhode Island Motor Vehicle Safety and Emissions Control Regulation No. 1); on-board diagnostics testing for 1996 and new vehicles (APC Regulation No. 34); Federal On-Board Refueling Vapor Recovery (ORVR) Rule; Federal Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Requirements; Federal Heavy-Duty Diesel Engine Emission Standards for Trucks and Buses; and Federal Emission Standards for Large Industrial Spark-Ignition Engines and Recreation Vehicles.

Controls on non-road sources expected by 2018 include the following federal regulations: Control of Air Pollution: Determination of Significance for Nonroad Sources and Emission Standards for New Nonroad Compression Ignition Engines at or above 37 kilowatts (59 FR 31306, June 17, 1994); Control of Emissions of Air Pollution from Nonroad Diesel Engines (63 FR 56967, Oct. 23, 1998); Control of Emissions from Nonroad Large Spark-Ignition Engines and Recreational Engines (67 FR 68241, Nov. 8, 2002); and Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuels (69 FR 38958, June 29, 2004).

Tables 1 and 2 are summaries of the 2002 baseline and 2018 estimated emissions inventories for Rhode Island. The 2018 estimated emissions include emissions growth as well as emission reductions due to ongoing emission control strategies and reasonable progress goals.

**Table 1: 2002 Emissions Inventory Summary for Rhode Island (tons per year)**

	VOC	NO <sub>x</sub>	PM <sub>2.5</sub>	PM <sub>10</sub>	NH <sub>3</sub>	SO <sub>2</sub>
<b>Point</b>	1,928	2,764	183	300	58	2,666

<b>Area</b>	31,402	3,886	2,064	8,295	883	4,557
<b>On-Road Mobile</b>	12,358	16,677	211	345	853	425
<b>Non-Road Mobile</b>	7,780	5,001	443	500	4	377
<b>Biogenics</b>	19,233	211	0	0	0	0
<b>Total</b>	<b>72,881</b>	<b>28,540</b>	<b>2,901</b>	<b>9,440</b>	<b>1,797</b>	<b>8,026</b>

**Table 2: 2018 Emissions Inventory Summary for Rhode Island (tons per year)**

	<b>VOC</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>	<b>NH<sub>3</sub></b>	<b>SO<sub>2</sub></b>
<b>Point</b>	1,841	3,018	340	473	195	1,509
<b>Area</b>	23,305	4,249	1,570	4,269	1,025	52
<b>On-Road Mobile</b>	6,305	5,351	148	168	1,200	100
<b>Non-Road Mobile</b>	5,389	2,723	303	348	5	42
<b>Biogenics</b>	19,233	211	0	0	0	0
<b>Total</b>	<b>56,073</b>	<b>15,553</b>	<b>2,362</b>	<b>5,260</b>	<b>2,425</b>	<b>1,703</b>

## **2. Modeling to Support the LTS and Determine Visibility Improvement for Uniform Rate of Progress**

MANE-VU performed modeling for the regional haze LTS for the 11 Mid-Atlantic and Northeast States and the District of Columbia. The modeling analysis is a complex technical evaluation that began with selection of the modeling system. MANE-VU used the following modeling system:

- **Meteorological Model:** The Fifth-Generation Pennsylvania State University/National Center for Atmospheric Research (NCAR) Mesoscale Meteorological Model (MM5) version 3.6 is a nonhydrostatic, prognostic meteorological model routinely used for

urban- and regional-scale photochemical, PM<sub>2.5</sub>, and regional haze regulatory modeling studies.

- Emissions Model: The Sparse Matrix Operator Kernel Emissions (SMOKE) version 2.1 modeling system is an emissions modeling system that generates hourly gridded speciated emission inputs of mobile, non-road mobile, area, point, fire, and biogenic emission sources for photochemical grid models.
- Air Quality Model: The EPA's Models-3/Community Multiscale Air Quality (CMAQ) version 4.5.1 is a photochemical grid model capable of addressing ozone, PM, visibility and acid deposition at a regional scale.
- Air Quality Model: The Regional Model for Aerosols and Deposition (REMSAD), is a Eulerian grid model that was primarily used to determine the attribution of sulfate species in the Eastern US via the species-tagging scheme.
- Air Quality Model: The California Puff Model (CALPUFF), version 5 is a non-steady-state Lagrangian puff model used to assess the contribution of individual States' emissions to sulfate levels at selected Class I receptor sites.

CMAQ modeling of regional haze in the MANE-VU region for 2002 and 2018 was carried out on a grid of 12x12 kilometer (km) cells that covers the 11 MANE-VU States (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont) and the District of Columbia and States adjacent to them. This grid is nested within a larger national CMAQ modeling grid of 36x36 km grid cells that covers the continental United States, portions of Canada and Mexico, and portions of the Atlantic and Pacific Oceans along the east and west coasts. Selection of a representative period

of meteorology is crucial for evaluating baseline air quality conditions and projecting future changes in air quality due to changes in emissions of visibility-impairing pollutants. MANE-VU conducted an in-depth analysis which resulted in the selection of the entire year of 2002 (January 1-December 31) as the best period of meteorology available for conducting the CMAQ modeling. The MANE-VU States' modeling was developed consistent with EPA's *Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, PM<sub>2.5</sub>, and Regional Haze*, April 2007 (EPA-454/B-07-002, available at [www.epa.gov/scram001/guidance/guide/final-03-pm-rh-guidance.pdf](http://www.epa.gov/scram001/guidance/guide/final-03-pm-rh-guidance.pdf)), and EPA document, *Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations*, August 2005 and updated November 2005 (EPA-454/R-05-001, available at [www.epa.gov/ttnchie1/eidocs/eiguid/index.html](http://www.epa.gov/ttnchie1/eidocs/eiguid/index.html)) (hereinafter referred to as "EPA's Modeling Guidance").

MANE-VU examined the model performance of the regional modeling for the areas of interest before determining whether the CMAQ model results were suitable for use in the regional haze assessment of the LTS and for use in the modeling assessment. The modeling assessment predicts future levels of emissions and visibility impairment used to support the LTS and to compare predicted, modeled visibility levels with those on the uniform rate of progress. In keeping with the objective of the CMAQ modeling platform, the air quality model performance was evaluated using graphical and statistical assessments based on measured ozone, fine particles, and acid deposition from various monitoring networks and databases for the 2002 base year. MANE-VU used a diverse set of statistical parameters from the EPA's Modeling Guidance

to stress and examine the model and modeling inputs. Once MANE-VU determined the model performance to be acceptable, MANE-VU used the model to assess the 2018 RPGs using the current and future year air quality modeling predictions, and compared the RPGs to the uniform rate of progress.

In accordance with 40 CFR 51.308(d)(3), the State of Rhode Island provided the appropriate supporting documentation for all required analyses used to determine the State's LTS. The technical analyses and modeling used to develop the glide path and to support the LTS are consistent with EPA's RHR, and interim and final EPA Modeling Guidance. EPA is proposing to find the MANE-VU technical modeling to support the LTS and determine visibility improvement for the uniform rate of progress acceptable because the modeling system was chosen and used according to EPA Modeling Guidance. EPA agrees with the MANE-VU model performance procedures and results, and that the CMAQ is an appropriate tool for the regional haze assessments for the Rhode Island LTS and regional haze SIP.

### **3. Relative Contributions of Pollutants to Visibility Impairment**

An important step toward identifying reasonable progress measures is to identify the key pollutants contributing to visibility impairment at each Class I area. To understand the relative benefit of further reducing emissions from different pollutants, MANE-VU developed emission sensitivity model runs using CMAQ to evaluate visibility and air quality impacts from various groups of emissions and pollutant scenarios in the Class I areas on the 20 percent worst visibility days.

Regarding which pollutants are most significantly impacting visibility in the MANE-VU region, MANE-VU's contribution assessment demonstrated that sulfate is the major contributor to PM<sub>2.5</sub> mass and visibility impairment at Class I areas in the Northeast and Mid-Atlantic Region. Sulfate particles commonly account for more than 50 percent of particle-related light extinction at northeastern Class I areas on the clearest days and for as much as, or more than, 80 percent on the haziest days. For example, at the Brigantine National Wildlife Refuge Class I area (the MANE-VU Class I area with the greatest visibility impairment), on the 20 percent worst visibility days in 2000 – 2004, sulfate accounted for 66 percent of the particle extinction. After sulfate, organic carbon (OC) consistently accounts for the next largest fraction of light extinction. Organic carbon accounted for 13 percent of light extinction on the 20 percent worst visibility days for Brigantine, followed by nitrate that accounts for 9 percent of light extinction.

The emissions sensitivity analyses conducted by MANE-VU predict that reductions in SO<sub>2</sub> emissions from EGU and non-EGU industrial point sources will result in the greatest improvements in visibility in the Class I areas in the MANE-VU region, more than any other visibility-impairing pollutant. As a result of the dominant role of sulfate in the formation of regional haze in the Northeast and Mid-Atlantic Region, MANE-VU concluded that an effective emissions management approach would rely heavily on broad-based regional SO<sub>2</sub> control efforts in the eastern United States.

#### **4. Reasonable Progress Goal**

Since the State of Rhode Island does not have a Class I area, it is not required to establish RPGs. However, as a MANE-VU member State, Rhode Island adopted the "Statement of



MANE-VU Concerning a Request for a Course of Action by States Within MANE- VU Toward Assuring Reasonable Progress" on June 7, 2007. This document included four emission management strategies that will provide for reasonable progress towards achieving natural visibility at the MANE-VU Class I areas. These emission management strategies are collectively known as the MANE-VU "Ask," and include: (a) timely implementation of BART requirements; (b) a 90 percent reduction in SO<sub>2</sub> emissions from each of the EGU stacks identified by MANE-VU comprising a total of 167 stacks<sup>5</sup>; (c) adoption of a low sulfur fuel oil strategy; and (d) continued evaluation of other control measures to reduce SO<sub>2</sub> and NO<sub>x</sub> emissions.

Rhode Island does not have any BART eligible units, nor does it have any EGU stacks identified by MANE-VU as a top contributor to visibility impairment in any of the MANE-VU Class I areas.

The MANE-VU low sulfur fuel oil strategy includes: Phase I reduction of distillate oil to 0.05% sulfur by weight (500 parts per million (ppm)) by no later than 2014; Phase II reductions of #4 residual oil to 0.25% sulfur by weight by no later than 2018; #6 residual oil to 0.5% sulfur by weight by no later than 2018; and further reduce the sulfur content of distillate oil to 15 ppm by 2018.

The expected reduction in SO<sub>2</sub> emissions by 2018 from the MANE-VU "Ask" will yield corresponding reductions in sulfate aerosol, the main culprit in fine-particle pollution and

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<sup>5</sup> See Appendix H – "2018 Emissions from EGUs in the Eastern US" of the Rhode Island SIP submittal for a complete listing of the 167 stacks.

regional haze. For Rhode Island, the MANE-VU analysis demonstrates that the reduction of the sulfur content in fuel oil will lead to an average reduction of  $0.25 - 0.36 \text{ ug/m}^3$  in the 24 hour  $\text{PM}_{2.5}$  concentration within the State, improving health and local visibility. In addition, the use of low sulfur fuels will result in cost savings to owners/operators of residential furnaces and boilers due to reduced maintenance costs and extended life of the units.

In its August 7, 2009 SIP submittal, Rhode Island states that “RI DEM intends to adopt the low-sulfur fuel oil requirements by January 1, 2012 and will have a compliance date of 2014 for Phase I and 2018 for Phase II.” RI DEM continues to work toward the adoption of this regulation. However, in a letter dated January 31, 2012, RI DEM informed EPA that they do not anticipate being able to adopt the low-sulfur fuel oil requirements before the end of 2012. RI DEM articulated that they are still committed to adopting the low-sulfur oil requirements but cannot do so on the time line of their original commitment.

EPA is today proposing approval of the Rhode Island Regional Haze SIP for the first implementation period without inclusion of an adopted low sulfur fuel oil regulation.<sup>6</sup> As described in Section III.A of this notice, Rhode Island neither causes nor contributes to visibility impairment in the closest Class I areas located in New Jersey, Vermont, New Hampshire, and Maine. For each of these Class I areas, the contribution of Rhode Island’s emissions to total sulfate is less than the 2% threshold set by the MANE-VU States to determine whether any State contributed to visibility impairment. While the  $\text{SO}_2$  reductions being achieved by Rhode Island

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<sup>6</sup> On January 15, 2009, EPA made a finding that, among other States, Rhode Island had failed to submit a Regional Haze SIP by the required deadline. 74 FR 2392. We have proposed a consent decree to resolve a deadline suit regarding this finding as well as the finding of failure for 36 other States, the District of Columbia, and the U.S. Virgin Islands. *National Parks Conservation Association v. Jackson*, Civ. No. 1:11-cv-1548 (D.D.C. 2011). Because we do not believe a low-sulfur fuel oil strategy is necessary for Rhode Island during this first implementation period, EPA is moving forward with this proposed approval of the State’s SIP submittal in order to satisfy our obligations under the Clean Air Act.

are somewhat less than the statewide reductions that were projected to result from adoption of a low-sulfur fuel oil strategy by 2012, this shortfall is not anticipated to interfere with the ability of other States to meet their respective reasonable progress goals. All emissions from Rhode Island contribute no more than 0.31% of total sulfate at any Class I area. We encourage adoption of a low-sulfur fuel oil strategy by Rhode Island as such a strategy will have local air quality and some, limited visibility benefits, however, we do not believe it is a necessary component of an approvable Regional Haze SIP for Rhode Island for the first implementation period.

## **5. Additional Considerations for the LTS**

Forty CFR 51.308(d)(3)(v) requires States to consider the following factors in developing the long term strategy:

- a. Emission reductions due to ongoing air pollution control programs, including measures to address reasonably attributable visibility impairment;
- b. Measures to mitigate the impacts of construction activities;
- c. Emission limitations and schedules for compliance to achieve the reasonable progress goal;
- d. Source retirement and replacement schedules;
- e. Smoke management techniques for agricultural and forestry management purposes including plans as currently exist within the State for these purposes;
- f. Enforceability of emissions limitations and control measures; and
- g. The anticipated net effect on visibility due to projected changes in point area, and mobile source emissions over the period addressed by the long term strategy.

### **a. Emission reductions including RAVI**

Since Rhode Island does not contain any Class I areas, the State is not required to address RAVI, nor has any Rhode Island source been identified as subject to RAVI. A list of Rhode Island's ongoing air pollution control programs is included in Section III.B.1.

**b. Construction activities**

The Regional Haze Rule requires Rhode Island to consider measures to mitigate the impacts of construction activities on regional haze. MANE-VU's consideration of control measures for construction activities is documented in "Technical Support Document on Measures to Mitigate the Visibility Impacts of Construction Activities in the MANE-VU Region, Draft, October 20, 2006."<sup>7</sup>

The construction industry is already subject to requirements for controlling pollutants that contribute to visibility impairment. For example, federal regulations require the reduction of SO<sub>2</sub> emissions from construction vehicles. At the State level, Rhode Island Air Pollution Control Regulation Number 5, "Fugitive Dust" regulates dust from construction and demolition activities. Section 5.3 of that regulation states, "No person shall cause or permit any materials, including but not limited to sand, gravel, soil, aggregate and any other organic or inorganic solid matter capable of releasing dust, to be handled, transported, mined, quarried, stored or otherwise utilized in any way so as to cause airborne particulate matter to travel beyond the property line of the emission source without taking adequate precautions to prevent particulate matter from becoming airborne."

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<sup>7</sup> This document has been provided as part of the docket to this proposed rulemaking.

MANE-VU's Contribution Report found that, from a regional haze perspective, crustal material generally does not play a major role. On the 20 percent best-visibility days during the 2000-2004 baseline period, crustal material accounted for 6 to 11 percent of the particle-related light extinction at the MANE-VU Class I Areas. On the 20 percent worst-visibility days, however, the contribution was reduced to 2 to 3 percent. Furthermore, the crustal fraction is largely made up of pollutants of natural origin (e.g., soil or sea salt) that are not targeted under the Regional Haze Rule. Nevertheless, the crustal fraction at any given location can be heavily influenced by the proximity of construction activities; and construction activities occurring in the immediate vicinity of MANE-VU Class I area could have a noticeable effect on visibility.

For this regional haze SIP, Rhode Island concluded that its current regulations are currently sufficient to mitigate the impacts of construction activities. Any future deliberations on potential control measures for construction activities and the possible implementation will be documented in the first regional haze SIP progress report in 2012. EPA proposes to find that Rhode Island has adequately addressed measures to mitigate the impacts of construction activities.

**c. Emission limitations and schedules for compliance to achieve the RPG**

In addition to the existing CAA control requirements discussed in Section III.B.1, Rhode Island has committed to adopt a low sulfur fuel oil strategy consistent with the MANE-VU "Ask" by the end of 2012. It is expected that the compliance date for Phase I will be in 2014 and the compliance date for Phase II will be in 2018. As described in Section III.B.4 above, we do not believe inclusion of the low sulfur oil strategy is a necessary component of an approvable

Region Haze SIP for Rhode Island. Therefore, EPA is proposing to determine that Rhode Island has satisfactorily considered emission limitations and schedules as part of the LTS.

**d. Source retirement and replacement schedule**

Forty CFR 51.308(d)(3)(v)(D) of the Regional Haze Rule requires Rhode Island to consider source retirement and replacement schedules in developing the long term strategy. Source retirement and replacement were considered in developing the 2018 emissions. The sources in Rhode Island that were shut down after the 2002 base year and therefore were not included in the 2018 inventory are: Albin, Display World, Clariant Corporation, Leviton, CCL Custom Manufacturing, Eastern Butcher Block, Fiber Mark, Metal Recycling Company Incorporated, Slater Dye Works in Cumberland, Slater Dye Works in Pawtucket, and Charbert Incorporated. EPA is proposing to determine that Rhode Island has satisfactorily considered source retirement and replacement schedules as part of the LTS.

**e. Smoke management techniques**

The Regional Haze Rule requires States to consider smoke management techniques related to agricultural and forestry management in developing the long-term strategy. MANE-VU's analysis of smoke management in the context of regional haze is documented in "Technical Support Document on Agricultural and Smoke Management in the MANE-VU Region, September 1, 2006."<sup>8</sup>

Rhode Island does not currently have a Smoke Management Program (SMP). However, SMPs are required only when smoke impacts from fires managed for resources benefits contribute

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<sup>8</sup> This document has been included as part of the docket to this proposed rulemaking.

significantly to regional haze. The emissions inventory presented in the above-cited document indicates that agricultural, managed and prescribed burning emissions are very minor; the inventory estimates that, in Rhode Island, those emissions from those source categories totaled 7.8 tons of PM<sub>10</sub>, 6.7 tons of PM<sub>2.5</sub> and 0.5 tons of SO<sub>2</sub> in 2002, which constitute 0.08%, 0.2% and 0.006% of the total inventory for these pollutants, respectively.

Source apportionment results show that wood smoke is a moderate contributor to visibility impairment at some Class I areas in the MANE-VU region; however, smoke is not a large contributor to haze in MANE-VU Class I areas on either the 20% best or 20% worst visibility days. Moreover, most of wood smoke is attributable to residential wood combustion.<sup>9</sup> Therefore, it is unlikely that fires for agricultural or forestry management cause large impacts on visibility in any of the Class I areas in the MANE-VU region. On rare occasions, smoke from major fires degrades air quality and visibility in the MANE-VU area. However, these fires are generally unwanted wildfires that are not subject to SMPs. EPA proposes to approve Rhode Island's decision that an Agricultural and Forestry Smoke Management Plan to address visibility impairment is not required at this time.

**f. Enforceability of emission limitations and control measures.**

All emission limitations included as part of Rhode Island's Regional Haze SIP are currently federally enforceable. EPA is proposing to find that Rhode Island has adequately addressed the enforceability of emission limitations and control measures.

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<sup>9</sup> Although not included as part of the Regional Haze SIP, effective April 14, 2011, Rhode Island promulgated APC Regulation No. 48 – Outdoor Wood Boilers which prohibits the sale or installation of any outdoor wood boiler on or after the effective date of the regulation unless it has been qualified by EPA to meet the Phase 2 emissions level for particulate matter (0.3 pounds per million British Thermal Units output).

**g. The anticipated net effect on visibility**

MANE-VU used the best and final emission inventory to model progress expected toward the goal of natural visibility conditions for the first regional haze planning period. All of the MANE-VU Class I areas are expected to achieve greater progress toward the natural visibility goal than the uniform rate of progress, or the progress expected by extrapolating a trend line from current visibility conditions to natural visibility conditions.<sup>10</sup>

In summary, EPA is proposing to find that Rhode Island has adequately addressed the LTS regional haze requirements.

**C. Consultation with States and Federal Land Managers**

On May 10, 2006, the MANE-VU State Air Directors adopted the Inter-RPO State/Tribal and FLM Consultation Framework that documented the consultation process within the context of regional phase planning, and was intended to create greater certainty and understanding among RPOs. MANE-VU States held ten consultation meetings and/or conference calls from March 1, 2007 through March 21, 2008. In addition to MANE-VU members attending these meetings and conference calls, participants from the Visibility Improvement State and Tribal Association of the Southeast (VISTAS) RPO, Midwest RPO, and the relevant Federal Land Managers were also in attendance. In addition to the conference calls and meeting, the FLMs were given the opportunity to review and comment on each of the technical documents developed by MANE-VU.

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<sup>10</sup> Projected visibility improvements for each MANE-VU Class I area can be found in the NESCAUM document dated May 13, 2008, “2018 Visibility Projections” ([www.nescaum.org/documents/2018-visibility-projections-final-05-13-08.pdf](http://www.nescaum.org/documents/2018-visibility-projections-final-05-13-08.pdf))



On January 26, 2009, Rhode Island submitted a draft Regional Haze SIP to the relevant FLMs for review and comment pursuant to 40 CFR 51.308(i)(2). The FLMs provided comments on the draft Regional Haze SIP in accordance with 40 CFR 51.308(i)(3). The comments received from the FLMs were addressed and incorporated in Rhode Island's SIP revision. Most of the comments were requests for additional detail as to various aspects of the SIP. These comments and Rhode Island's response to comments can be found in the docket for this proposed rulemaking.

On July 30, 2009, Rhode Island proposed its Regional Haze SIP for public hearing and no comments were received. To address the requirement for continuing consultation procedures with the FLMs under 40 CFR 51.308(i)(4), Rhode Island commits in their SIP to ongoing consultation with the FLMs on emission strategies, major new source permits, assessments or rulemaking concerning sources identified as probable contributors to visibility impairment, any changes to the monitoring strategy, work on the periodic revisions to the SIP, and ongoing communications regarding visibility impairment.

EPA is proposing to find that Rhode Island has addressed the requirements for consultation with the Federal Land Managers.

#### **D. Periodic SIP Revisions and Five-Year Progress Reports**

Consistent with the requirements of 40 CFR 51.308(g), Rhode Island has committed to submitting a report on reasonable progress (in the form of a SIP revision) to the EPA every five

years following the initial submittal of its regional haze SIP. The reasonable progress report will evaluate the progress made towards the RPGs for the MANE-VU Class I areas, located in Maine, New Hampshire, Vermont, and New Jersey.

Forty CFR 51.308(f) requires the RI DEM to submit periodic revisions to its Regional Haze SIP by July 31, 2018, and every ten years thereafter. RI DEM acknowledges and agrees to comply with this schedule.

Pursuant to 40 CFR 51.308(d)(4)(v), RI DEM will also make periodic updates to the Rhode Island emissions inventory. RI DEM proposes to complete these updates to coincide with the progress reports. Actual emissions will be compared to projected modeled emissions in the progress reports.

Lastly, pursuant to 40 CFR 51.308(h), RI DEM will submit a determination of adequacy of its regional haze SIP revision whenever a progress report is submitted. Rhode Island's regional haze SIP states that, depending on the findings of its five-year review, Rhode Island will take one or more of the following actions at that time, whichever actions are appropriate or necessary:

- If Rhode Island determines that the existing State Implementation Plan requires no further substantive revision in order to achieve established goals for visibility improvement and emissions reductions, RI DEM will provide to the EPA Administrator a negative declaration that further revision of the existing plan is not needed.
- If Rhode Island determines that its implementation plan is or may be inadequate to ensure reasonable progress as a result of emissions from sources in one or more other

State(s) which participated in the regional planning process, Rhode Island will provide notification to the EPA Administrator and to those other State(s). Rhode Island will also collaborate with the other State(s) through the regional planning process for the purpose of developing additional strategies to address any such deficiencies in Rhode Island's plan.

- If Rhode Island determines that its implementation plan is or may be inadequate to ensure reasonable progress as a result of emissions from sources in another country, Rhode Island will provide notification, along with available information, to the EPA Administrator.
- If Rhode Island determines that the implementation plan is or may be inadequate to ensure reasonable progress as a result of emissions from sources within the State, Rhode Island will revise its implementation plan to address the plan's deficiencies within one year from this determination.

#### **IV. What Action is EPA Proposing to Take?**

EPA is proposing approval of Rhode Island's August 7, 2009 SIP revision as meeting the applicable requirements of the Regional Haze Rule found in 40 CFR 51.308.

#### **V. Statutory and Executive Order Reviews**

Under the Clean Air Act, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable Federal regulations. 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, EPA's role is to approve State choices, provided that they meet the criteria of the Clean Air Act. Accordingly, this proposed action

merely approves State law as meeting Federal requirements and does not impose additional requirements beyond those imposed by State law. For that reason, this proposed action:

- is not a "significant regulatory action" subject to review by the Office of Management and Budget under Executive Order 12866 (58 FR 51735, October 4, 1993);
- does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*);
- is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*);
- does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Public Law 104-4);
- does not have Federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);
- is not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997);
- is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001);
- is not subject to requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the Clean Air Act; and
- does not provide EPA with the discretionary authority to address, as appropriate, disproportionate human health or environmental effects, using practicable and legally permissible methods, under Executive Order 12898 (59 FR 7629, February 16, 1994).

In addition, this rule does not have tribal implications as specified by Executive Order 13175 (65 FR 67249, November 9, 2000), because the SIP is not approved to apply in Indian country located in the State, and EPA notes that it will not impose substantial direct costs on tribal governments or preempt tribal law.

**List of Subjects in 40 CFR Part 52**

Environmental protection, Air pollution control, Carbon monoxide, Incorporation by reference, Intergovernmental relations, Lead, Nitrogen dioxide, Ozone, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides, Volatile organic compounds.

**AUTHORITY:** 42 U.S.C. 7401 et seq.

Dated: February 13, 2012

Signed: H. Curtis Spalding,  
Regional Administrator,  
EPA Region 1

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